

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-3 (Canceled).

Claim 4 (Currently Amended): ~~The method of claim 2,~~ A method for forming an insulating film on a silicon-containing substrate to be processed, comprising:

forming a gas mixture by mixing a nitrogen containing gas and an oxygen containing gas, the nitrogen containing gas being a nitrogen gas or a nitrogen compound gas and the oxygen containing gas being an oxygen gas or an oxygen compound gas;

exciting the gas mixture using a high frequency plasma to produce nitrogen radicals and oxygen radicals;

supplying the nitrogen radicals and the oxygen radicals to a surface of the substrate;
and

creating an insulating film containing nitrogen using the nitrogen radicals and the oxygen radicals on the surface of the substrate,

wherein, ~~the gas mixture forming step includes the process in which~~ when the gas mixture is formed, the gas mixture ratio between the oxygen containing gas ~~or the oxygen compound gas~~ and the nitrogen containing gas ~~or the nitrogen compound gas~~ varies with time.

Claims 5-6 (Canceled).

Claim 7 (Currently Amended): The method of claim [[2]] 4, wherein the high frequency plasma is produced by exciting the nitrogen gas and the oxygen gas at a frequency of 400 kHz - 500 kHz.

Claims 8-15 (Canceled).

Claim 16 (Withdrawn): An apparatus for processing a substrate to be processed, comprising:

a radical forming unit for forming nitrogen radicals and oxygen radicals using a high frequency plasma; and

a processing vessel for holding the substrate,

wherein the radical forming unit includes a supply port for feeding the nitrogen radicals and the oxygen radicals produced in the radical forming unit to the processing vessel, and the nitrogen radicals and the oxygen radicals are supplied to a surface of the substrate held in the processing vessel to form an insulating film thereon.

Claim 17 (Withdrawn): The apparatus of claim 16, further comprising a gas inlet port attached to the radical forming unit for feeding a gas mixture into the radical forming unit, wherein the gas inlet port controls the gas mixture to have a desired mixture ratio between a first source material gas containing nitrogen and a second source material gas containing oxygen, and wherein the ratio between the nitrogen radicals and the oxygen radicals formed in the radical forming unit is controlled through an adjustment of the mixture ratio between the first source material gas and the second source material gas.

Claim 18 (Withdrawn): The apparatus of claim 16, wherein the radical forming unit is placed at a side of the processing vessel and generates a stream of gas flowing along the surface of the substrate, and wherein the nitrogen radicals and the oxygen radicals are supplied onto the surface of the substrate by being carried along the surface of the substrate by the stream of gas.

Claim 19 (Withdrawn): The apparatus of claim 16 or 18, wherein the processing vessel has a gas exhaust port for evacuating the nitrogen radicals and the oxygen radicals at an opposite side of the supply port of the radical forming unit.

Claim 20 (Withdrawn): The apparatus of claim 16, wherein the radical forming unit further includes frequency application means for exciting the gas mixture with a frequency of 400 kHz-500 kHz.

Claim 21 (New): A method for forming an insulating film on a silicon-containing substrate to be processed, comprising:

forming a gas mixture by mixing a nitrogen containing gas and an oxygen containing gas, the nitrogen containing gas being a nitrogen gas or a nitrogen compound gas and the oxygen containing gas being an oxygen gas or an oxygen compound gas;

exciting the gas mixture using a high frequency plasma to produce nitrogen radicals and oxygen radicals;

supplying the nitrogen radicals and the oxygen radicals to a surface of the substrate;
and

creating an insulating film containing nitrogen using the nitrogen radicals and the oxygen radicals on the surface of the substrate,

wherein, when the gas mixture is formed, at least one of the oxygen containing gas and the nitrogen containing gas is provided intermittently.

Claim 22 (New): The method of claim 21, wherein, when the gas mixture is formed, a ratio between a gas supplying time and a gas stoppage time for each of said at least one of the oxygen containing gas and the nitrogen containing gas varies with time, the gas supplying time being an amount of time during which each of said at least one of the oxygen containing gas and the nitrogen containing gas is supplied, and the gas stoppage time being an amount of time during which each of said at least one of the oxygen containing gas and the nitrogen containing gas is not supplied.

Claim 23 (New): The method of claim 21, the nitrogen radicals and the oxygen radicals are supplied onto the substrate to flow along the surface of the substrate.

Claim 24 (New): The method of claim 22, the nitrogen radicals and the oxygen radicals are supplied onto the substrate to flow along the surface of the substrate.

Claim 25 (New): A method for forming an insulating film on a silicon-containing substrate to be processed, comprising:

forming a gas mixture of a gas mixture ratio by providing a nitrogen containing gas and an oxygen containing gas to a gas mixing unit, the nitrogen containing gas being a nitrogen gas or a nitrogen compound gas and the oxygen containing gas being an oxygen gas or an oxygen compound gas;

forming nitrogen radicals and oxygen radicals by providing the gas mixture from the gas mixing unit to a plasma exciting unit; and

supplying the nitrogen radicals and the oxygen radicals from the plasma exiting unit to a surface of the substrate to form an insulating film containing nitrogen using the nitrogen radicals and the oxygen radicals on the surface of the substrate,

wherein, when the gas mixture is formed, at least one of the oxygen containing gas and the nitrogen containing gas is provided intermittently to the gas mixing unit, and

wherein the gas mixture ratio between the oxygen containing gas and the nitrogen containing gas is controlled by adjusting a ratio between a gas supplying time and a gas stoppage time for each of said at least one of the oxygen containing gas and the nitrogen containing gas, the gas supplying time being an amount of time during which each of said at least one of the oxygen containing gas and the nitrogen containing gas is being supplied to the gas mixing unit, and the gas stoppage time being an amount of time during which each of said at least one of the oxygen containing gas and the nitrogen containing gas is not supplied to the gas mixing unit.